

REMARKS

By the above amendment, claims 1-3 have been amended to correct minor informalities and to utilize consistent terminology throughout. It is noted that the abstract has been amended in a manner similar to that of the amendment of claim 1. Additionally, new dependent claims 19 and 20 which depend directly or indirectly from claim 1, have been presented, as well as a new independent claim 21 and dependent claims 22 and 23, which claims recite further features of the present invention. Also, the cross-reference to related application has been updated to indicate the patented status of the parent application.

As to the rejection of claims 1-18 under the judicially doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,331,064, which is the patent which matured from the parent application, as recognized by the Examiner, such rejection can be overcome by the submission of a Terminal Disclaimer. Applicants, without acquiescing in the propriety of the obviousness-type double patenting rejection, as set forth by the Examiner, in order to expedite issuance of this application, submit herewith a Terminal Disclaimer and the appropriate statutory fee therefor. As such, this rejection should now be overcome.

As to the rejection of claims 1 and 2 under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al in view of Piejak et al, this rejection is traversed insofar as it is applicable to the present claims, and reconsideration and withdrawal of the rejection are respectfully requested.

Applicants note that although claims 1-18 were rejected under the judicially created doctrine of obviousness-type double patenting, which has been overcome by the submission of a Terminal Disclaimer, and that claims 1 and 2 stand rejected over the cited art as indicated above, claim 3 which was subject to the obviousness-type double patenting rejection which has been overcome, does not stand rejected over the cited art. Accordingly, even though claim 3 remains in dependent form

dependent upon claim 1 at this time, applicants assume that claim 3 would be considered allowable when rewritten in independent form, since there is no rejection of such claim over the cited art. Applicants have retained claim 3 in dependent form since parent claim 1 is considered to patentably distinguish over the cited art, as will be discussed below.

As to the requirements to support a rejection under 35 U.S.C. 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under §103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Furthermore, such requirements have been clarified in the recent decision of In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge".

The court pointed out:

The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual

question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

In setting forth the rejection of claims 1 and 2 over the combination of Matsumoto et al in view of Piejak et al, the Examiner states that "Matsumoto et al discloses the claimed invention except for the teaching that a lamp tube outside electrode is attached to an adjacent outside electrode of another lamp tube. It would have been obvious to one skilled in the art at the time the invention was made to modify the LCD back-lit assembly as Matsumoto et al to include a plurality of lamp tubes with interconnected outside electrodes in order to efficiently control the display of Matsumoto et al with one source." (emphasis added) Applicants note that the statement does not appear to refer to the disclosure of Piejak et al in relation to modification of Matsumoto et al.

Turning first to Matsumoto et al, the Examiner appears to suggest the Matsumoto et al discloses a "LCD back-lit assembly". Applicants submit that contrary to this apparent position of the Examiner, Matsumoto et al does not disclose or teach the claimed features of claim 1 and the dependent claims including the features of a "liquid crystal display", a "liquid crystal display panel for modulating light to form an image" nor "a backlight unit...being disposed behind said liquid crystal display panel", in addition to the features recognized by the Examiner as being absent in Matsumoto et al. That is, while Matsumoto et al discloses a fluorescent lamp 1 having external electrodes 5a and 5b, for example, Matsumoto et al does not disclose a liquid crystal display with a back light unit to which the fluorescent lamp 1 of Matsumoto et al is applied since, in accordance with the disclosure and teaching

of Matsumoto et al, the fluorescent lamp 1 thereof serves as a self-light emitting display device which is different from a back light unit for a liquid crystal display panel which modulates light to forming image. Referring, for example, to Figs. 16a to 20d of Matsumoto et al and the corresponding description at cols. 12 and 13, Matsumoto et al discloses an image display device using the fluorescent lamps of three primary colors R, G and B so as to display a symbol, character, figure or the like. See Fig. 18, for example. Each lamp is arranged and connected in a matrix configuration so as to be driven by a matrix driving for effecting a desired display. Thus, applicants submit that based upon the disclosure of Matsumoto et al, Matsumoto et al does not disclose or teach the aforementioned features and it is not obvious in the sense of 35 U.S.C. 103 to utilize the fluorescent lamp of Matsumoto et al in a back light unit of a liquid crystal display panel as defined in claim 1 and the dependent claims. As such, applicants submit that claim 1 and the dependent claims patentably distinguish over Matsumoto et al in the sense of 35 U.S.C. 103, and such claims should be considered allowable thereover.

Applicants note that any contention by the Examiner that it would be obvious to utilize the lamps of Matsumoto et al in a back light unit to provide the claimed configuration represents a hindsight reconstruction attempt utilizing the principle of obvious to try which is not the standard of 35 U.S.C. 103. See In re Fine, supra. Furthermore, assuming arguendo that the Examiner would take the position that it would be obvious based upon common knowledge to provide a back light unit as claimed, this position has been rejected by the court in the decision of In re Lee, supra. As such, applicants submit that any attempt to utilize Matsumoto et al in rejecting claims of this application is improper.

With respect to Piejak et al, applicants submit that this patent also does not disclose a liquid crystal display comprising a liquid crystal display panel operating in the manner defined, nor a back light unit disposed behind the liquid crystal display

panel and having the features as recited in claim 1 and the dependent claims of this application. Thus, applicants submit that the proposed combination of Matsumoto et al and Piejak et al represents a hindsight reconstruction attempt of the present invention which does not provide the claimed features as recited in independent claim 1 and the dependent claims of this application. Accordingly, applicants submit that whether or not Piejak et al discloses a plurality of lamp tubes having outside electrodes including a power supply electrode and a ground electrode, Piejak et al does not overcome the deficiencies of Matsumoto et al, such that the proposed combination fails to meet the claimed limitations of claim 1 and the dependent claims. Accordingly, applicants submit claims 1 and 2 patentably distinguish over this proposed combination of references in the sense of 35 U.S.C. 103 and should be considered allowable thereover.

With respect to newly added dependent claims 19 and 20 which depend directly or indirectly from claim 1, applicants note that claim 19 recites the feature that the one outside electrode which is disposed at the at least one of the plurality of lamp tubes is a power supply electrode represented by the electrode 35c in Fig. 4 of the drawings of this application, for example, and this power supply electrode is electrically connected with the another outside electrode which is a power supply electrode disposed at the adjacent another of the plurality of lamp tubes as clearly illustrated in Fig. 4 of the drawings, for example. It is noted that Fig. 8A also illustrates such arrangement. As recognized by the Examiner, Matsumoto et al provides no disclosure or teaching of such claimed subject matter, and apparently, the Examiner refers to Piejak et al for such disclosure. Referring to Fig. 1 of Piejak et al, a plurality of lamp tubes is illustrated, wherein each lamp tube has a power supply electrode represented by the electrodes 32, 36, 44, 46, 48 and 50, for example. However, applicants note that the connection of the power supply electrodes is such that +V is applied to the power supply electrodes 32, 44 and 46,

whereas -V is applied to the power supply electrodes 36, 48 and 50. Thus, in this construction of Piejak et al, the power supply electrode 32 of the lamp tube 12 is electrically connected to a power supply electrode 44 of the lamp tube 18 which is not adjacent to the lamp tube 18, it being noted that the lamp tube 14 is adjacent to the lamp tube 12. Likewise, the power supply electrode 36 being supplied with the voltage -V is also supplied to a power supply electrode of a non-adjacent lamp tube. Applicants note that Fig. 3 of Piejak et al illustrates a similar arrangement and applicants submit that Piejak et al does not disclose the claimed features of claim 19 in the sense of 35 U.S.C. 103, such that claim 19 and therewith dependent claim 20 further patentably distinguish over this proposed combination of references in the sense of 35 U.S.C. 103 and should be considered allowable thereover.


With respect to newly added independent claim 21 and the dependent claims thereof, applicants note that this claim recites the feature that the outside electrodes include at least two kinds of electrodes having different voltages applied thereto. That is, a power supply electrode having a power supply voltage applied thereto represented by 35c in the drawings of this application and a ground electrode having a ground voltage applied thereto represented by the electrode 35d. Claim 21 further recites that a plurality of groups of electrodes are constructed so that electrodes in each group are arranged in a substantially line configuration with respect to a direction transverse to an extending direction of a respective one of the lamp tubes and electrically interconnected with an electrode of an adjacent lamp tube, as clearly illustrated in Fig. 4 of the drawings, for example. Additionally, as recited, each group of electrodes is arranged at a different position of the plurality of lamp tubes with respect to the extending direction of a respective one of the lamp tubes so that a same kind of the at least two kinds of electrodes is only arranged in the same line with respect to the transverse direction. Again looking to Fig. 4, it is readily apparent that the electrodes 35d are all arranged in the same line as is the electrodes 35c with

the electrodes 35d and 35c being arranged at multiple positions of the plurality of lamp tubes with respect to the extending direction thereof. Applicants note that as recognized by the Examiner, such features are not disclosed by Matsumoto et al and it is apparent that such features are also not disclosed by Piejak et al in that Piejak et al specifically provides that with respect to the power supply electrodes, power supply electrodes having different voltages applied thereto and representing different kinds of electrodes such as electrodes 32, 44 and 46 (+V) and electrodes 46, 48 and 50 (-V) are arranged in the same position and are arranged in the same line, such that the disclosure of Piejak et al is contrary to the claimed features of claim 21 and the dependent claims. Thus, these claims further patentably distinguish over the cited art and should be considered allowable at this time.

In view of the above amendments and remarks and the submission of the Terminal Disclaimer, applicants submit that all claims present in this application should now be in condition for allowance, and issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (501.37916CX1) and please credit any excess fees to such deposit account.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Page 1, please amend the Cross-Reference to Related Application as follows:

Cross-Reference to Related Application

This is a continuation of U.S. application Serial No. 09/449,835, filed November 26, 1999, now U.S. Patent No. 6,331,604, the subject matter of which is incorporated by reference herein.

IN THE CLAIMS:

Please amend claims 1-3 as follows:

1. (amended) A liquid crystal display comprising:
a liquid crystal display panel for modulating light to form an image; and
a back light unit having a plurality of lamp tubes without inside electrodes and which are discharged by outside electrodes disposed along an outer surface of said at least one of said plurality of lamp-tube tubes, said back light unit being disposed behind said liquid crystal display panel;
wherein one outside electrode disposed at said at least one of said plurality of lamp tubes is electrically connected with another outside electrode disposed at an adjacent another of said plurality of lamp tubes.
2. (amended) A liquid crystal display according to claim 1, wherein said at least one of said plurality of lamp tubes has at least one power supply electrode and at least one ground electrode.
3. (amended) A liquid crystal display according to claim 1, wherein said at least one of said plurality of lamp tubes has at least one bent portion.

Please add the following claims new claims:

--19. A liquid crystal display according to claim 1, wherein said one outside electrode disposed at said at least one of said plurality of lamp tubes is a power supply electrode and is electrically connected with said another outside electrode which is another power supply electrode disposed at said adjacent another of said plurality of lamp tubes.

20. A liquid crystal display according to claim 19, wherein said outside electrodes include at least one ground electrode and one outside ground electrode disposed at said at least one of said plurality of lamp tubes is electrically connected with another outside ground electrode disposed at said adjacent another of said plurality of lamp tubes.

21. A liquid crystal display comprising:

a liquid crystal display panel for modulating light to form an image; and

a back light unit having a plurality of lamp tubes without inside electrodes and which are discharged by outside electrodes disposed along an outer surface of said at least one lamp tube, said back light unit being disposed behind said liquid crystal display panel;

wherein said outside electrode include at least two kinds of electrodes having different voltages applied thereto;

a plurality of groups of electrodes are constructed so that electrodes in each group are arranged in a substantially line configuration with respect to a direction transverse to an extending direction of a respective one of said lamp tubes and electrically interconnected with an electrode of an adjacent lamp tube;

each group of electrodes is arranged at a different position of said plurality of lamp tubes with respect to the extending direction of a respective one of said lamp tubes so that a same kind of said at least two kinds of electrodes is only arranged in the same line with respect to the transverse direction.

22. A liquid crystal display according to claim 21, wherein said outside electrodes include at least one power supply electrode.

23. A liquid crystal display according to claim 22, wherein said outside electrodes include at least one ground electrode.--

IN THE ABSTRACT OF THE DISCLOSURE:

Please amend the abstract as follows:

Abstract of the Disclosure

A liquid crystal display having a liquid crystal display panel for modulating light to form an image and a back light unit having a plurality of lamp tubes without inside electrodes and which are discharged by outside electrodes disposed along an outer surface of ~~the~~ at least one of the plurality of lamp tube tubes, the back light unit being disposed behind the liquid crystal display panel. One outside electrode disposed at ~~the at least one~~ of the plurality of lamp tube tubes is electrically connected with another outside electrode disposed at an another adjacent lamp tube.